US006586760B1

(12) **United States Patent**
Ross et al.

(10) **Patent No.: US 6,586,760 B1**
(45) **Date of Patent: Jul. 1, 2003**

(54) **WATER LEVEL MEASURING METHOD AND SYSTEM**

(75) Inventors: **Jerry Hubert Ross**, Waveland, MS (US); **Eugene Clark Hayes**, Diamondhead, MS (US); **Michael George Zalants**, Mandeville, LA (US)

(73) Assignee: **The United States of America as represented by the Secretary of the Interior**, Washington, DC (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **09/433,074**

(22) Filed: **Nov. 3, 1999**

(51) **Int. Cl.**[7] **G01N 21/85**
(52) **U.S. Cl.** **250/577**; 250/573; 73/293
(58) **Field of Search** 250/573–577, 250/201.1, 234–236; 356/249–255, 436, 440, 3.02; 33/377, 366.23; 73/293, 1.73; 340/612, 618, 619

(56) **References Cited**

U.S. PATENT DOCUMENTS

4,524,282 A * 6/1985 King 250/577
5,973,770 A * 10/1999 Carter et al. 356/4.09

* cited by examiner

Primary Examiner—Que T. Le
Assistant Examiner—Thanh X. Luu
(74) *Attorney, Agent, or Firm*—Ross F. Hunt, Jr.

(57) **ABSTRACT**

A method and system are provided for determining the level of a body of water, whether free flowing or stationary. Positionable mirrors are located at an area adjacent to but spaced from the body of water. The mirrors direct a laser beam at an angle to true vertical onto the surface of the body of water such that a portion of the beam is reflected from the surface. A receiver is located at a known distance from the mirrors on the opposite side of the body of water and in a common horizontal plane. The receiver receives a reflected laser beam and redirects the beam to a signal detector. A controller for the mirrors determines the angle to true vertical at which the mirrors are set after receiving an output from the signal detector. A simple calculation, based on the determined angle and the known distance between the mirrors and the receiver is then made of the distance from the common horizontal plane to the water surface so as to determine the water level.

15 Claims, 1 Drawing Sheet